



# News Release

## Defense Advanced Research Projects Agency

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IMMEDIATE RELEASE

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### **DARPA SOLICITS PROPOSALS TO DEVELOP “FRACTURE PUTTY”**

*Agency seeks dynamic new material to improve healing*

The Defense Advanced Research Projects Agency (DARPA) is accepting proposals to create and develop “Fracture Putty,” a dynamic new material that could dramatically facilitate the healing of soldiers who suffer traumatic battlefield wounds such as compound bone fractures.

In a solicitation published on the Federal Business Opportunities website, DARPA said such cases are “very difficult to treat, often requiring multiple surgeries and long healing and rehabilitation times.” Amputations are not uncommon. The agency said that current treatments employing bone screws, plates and rods are deficient and can themselves lead to further complications. The solicitation is available online at <https://www.fbo.gov/utills/view?id=c6ee51a50383fd091a5f2cc1eab554fe>.

In response to this challenge, DARPA wants to develop a dynamic, putty-like material which, when packed in/around a compound bone fracture, provides full load-bearing capabilities within days, creates an osteoconductive bone-like internal structure, and degrades over time to harmless resorbable by-products as normal bone regenerates. The agency believes that a successful “Fracture Putty” could rapidly restore a patient to ambulatory function while normal healing ensues, with dramatically reduced rehabilitation time and the elimination of infection and secondary fractures.

“Fracture Putty represents the ultimate convergence of materials science, mechanics, and orthopedics,” said DARPA Program Manager Mitchell Zakin, Ph.D. “We want to hear from potential performers with expertise in chemistry, biomaterials, adhesives, mechanics, theoretical modeling of dynamic systems under complex mechanical stress, biology of bone, animal models of bone trauma, clinical orthopedics and orthopedic surgery, and engineering.”

Potential solutions for Fracture Putty could involve novel bioresorbable adhesives that bond preferentially to bone rather than to soft tissues, that have bone-like mechanical properties, and work in the wet biological environment; load-bearing biomaterials with high mechanical strength and high porosity that match the mechanical properties of bone; biomaterials that create hierarchical bone-like internal structure; and biomaterials that adapt to biochemical cues. Mathematical models for dynamically remodeling systems with complex stimuli will also be necessary to achieve Fracture Putty’s development.

DARPA Co-Program Manager Col. Geoffrey Ling, U.S. Army, M.D., Ph.D., a neurologist, said, “Everyone involved in the treatment of severe bone injury and trauma will

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welcome an innovation to patient treatment and care that provides initial fracture fixation, facilitates natural bone regrowth, and is nontoxic, non-antigenic, and degradable.”

Organizations interested in proposing approaches for DARPA’s Fracture Putty program should obtain the solicitation for further details. The solicitation is available online at <https://www.fbo.gov/utills/view?id=c6ee51a50383fd091a5f2cc1eab554fe> . Responses to the solicitation are due July 29. Multiple awards are anticipated.

DARPA has scheduled a Proposers’ Conference for July 1 to provide detailed information to researchers interested in learning more about this new program. The conference, which is free of charge, will be held at the Executive Conference Center in Arlington, Va. Attendance is neither a prerequisite for bidding nor a guarantee of winning a contract. Registration for the Proposers’ Conference is essential; to register online, visit <http://www.eventmakeronline.com/dso/view/index.asp?meetingid=599> . In addition to learning about the program’s goals and objectives, the Proposers’ Conference also will afford opportunities for researchers to meet, network and begin to create multidisciplinary teams that together might choose to pursue a bid. To learn more about teaming opportunities for Fracture Putty, visit <http://www.sainc.com/FPTeaming>.

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